CLAIMS

What is claimed is:

1. A stent, in particular a coronary stent, for expansion from a first condition into an expanded second condition in which it holds a vessel in an expanded state, said stent comprising:

a tubular body, a peripheral surface of which is formed by a plurality of support portions that extend in a longitudinal direction of the stent, the support portions comprising:

a plurality of bar elements; and

a plurality of connecting bars that connect the bar elements;

wherein the support portions form a plurality of support portion groups with at least a first support portion and a second support portion in adjacent relationship thereto in a peripheral direction of the stent, the bar elements of which extend in a meander configuration in the longitudinal direction of the stent, and

wherein a first engagement point of the connecting bars engages the first support portion and a second engagement point of the connecting bars engages the second support portion, such that the first and second engagement points are spaced apart from each other in the longitudinal direction of the stent and the connecting bars are configured and arranged so the spacing in the longitudinal direction between the first and second engagement points changes upon expansion of the stent to compensate for a reduction in length of the respective support portions.

2. The stent of claim 1, wherein

at least the bar elements of a first support portion and of the two second support portions arranged in the peripheral direction of the stent

at both sides of the first support portion extend in a meander configuration in the longitudinal direction of the stent and

the first engagement points of the connecting bars engage the first support portion and the second engagement points of the connecting bars engage one of the two second support portions,

wherein the first and second engagement points are spaced relative to each other in the longitudinal direction of the stent and the connecting bars are configured and arranged so that the spacing in the longitudinal direction of the stent changes between the first and second engagement points changes upon expansion of the stent in the same manner.

3. The stent of claim 1, wherein

at least the first engagement points of the connecting bars are located near a turning point of the bar element to which the connecting point is engaged.

4. The stent of claim 3, wherein

the second engagement points of the connecting bars are located near a turning point of the bar element to which the connecting point is engaged.

5. The stent of claim 2, wherein

at least the first engagement points of the connecting bars are located near a turning point of the bar element to which the connecting point is engaged.

6. The stent of claim 5, wherein

the second engagement points of the connecting bars are located near a turning point of the bar element to which the connecting point is engaged.

7. The stent of claim 1, wherein
the connecting bars are of a substantially straight configuration.

8. The stent of claim 2, wherein
the connecting bars are of a substantially straight configuration.

9. The stent of claim 4, wherein
the connecting bars are of a substantially straight configuration.

10. The stent of claim 6, wherein
the connecting bars are of a substantially straight configuration.

11. The stent of claim 1, wherein
a connecting line between the first and second engagement points extends substantially in the longitudinal direction of the stent.

12. The stent of claim 7, wherein
a connecting line between the first and second engagement points extends substantially in the longitudinal direction of the stent.

13. The stent of claim 8, wherein
a connecting line between the first and second engagement points extends substantially in the longitudinal direction of the stent.

14. The stent of claim 9, wherein

a connecting line between the first and second engagement points extends substantially in the longitudinal direction of the stent.

15. The stent of claim 10, wherein

a connecting line between the first and second engagement points extends substantially in the longitudinal direction of the stent.

16. The stent of claim 1, wherein

at least one support portion is formed by bar elements extending in a meander configuration in the longitudinal direction of the stent, wherein the bar elements comprise two bar element portions that are adjacent in the longitudinal direction of the stent and which extend between a turning point to form the limbs of a V-shape.

17. The stent of claim 11, wherein

at least one support portion is formed by bar elements extending in a meander configuration in the longitudinal direction of the stent, wherein the bar elements comprise two bar element portions that are adjacent in the longitudinal direction of the stent and which extend between a turning point to form the limbs of a V-shape.

18. The stent of claim 12, wherein

at least one support portion is formed by bar elements extending in a meander configuration in the longitudinal direction of the stent, wherein the bar elements comprise two bar element portions that are adjacent in the longitudinal direction of the stent and which extend between a turning point to form the limbs of a V-shape.

19. The stent of claim 13, wherein

at least one support portion is formed by bar elements extending in a meander configuration in the longitudinal direction of the stent, wherein the bar elements comprise two bar element portions that are adjacent in the longitudinal direction of the stent and which extend between a turning point to form the limbs of a V-shape.

20. The stent of claim 14, wherein

at least one support portion is formed by bar elements extending in a meander configuration in the longitudinal direction of the stent, wherein the bar elements comprise two bar element portions that are adjacent in the longitudinal direction of the stent and which extend between a turning point to form the limbs of a V-shape.

21. The stent of claim 15, wherein

at least one support portion is formed by bar elements extending in a meander configuration in the longitudinal direction of the stent, wherein the bar elements comprise two bar element portions that are adjacent in the longitudinal direction of the stent and which extend between a turning point to form the limbs of a V-shape.

22. The stent of claim 16, wherein

the bar element portions include an angle of between 80° and 100°.

23. The stent of claim 22, wherein

the bar element portions include an angle of 90°.

24. The stent of claim 17, wherein

the bar element portions include an angle of between 80° and 100°.

25. The stent of claim 24, wherein
the bar element portions include an angle of 90°.

26. The stent of claim 18, wherein
the bar element portions include an angle of between 80° and 100°.

27. The stent of claim 26, wherein
the bar element portions include an angle of 90°.

28. The stent of claim 19, wherein
the bar element portions include an angle of between 80° and 100°.

29. The stent of claim 28, wherein
the bar element portions include an angle of 90°.

30. The stent of claim 20, wherein
the bar element portions include an angle of between 80° and 100°.

31. The stent of claim 30, wherein
the bar element portions include an angle of 90°.

32. The stent of claim 21, wherein
the bar element portions include an angle of between 80° and 100°.

33. The stent of claim 32, wherein
the bar element portions include an angle of 90°.

34. The stent of claim 1, wherein

the bar elements of the first and second support portions are of substantially the same periodic configuration and a length of the connecting bars is such that the adjacent bar elements in the first condition of the stent are displaced relative to each by up to a quarter period in the longitudinal direction of the stent.

35. The stent of claim 23, wherein

the bar elements of the first and second support portions are of substantially the same periodic configuration and a length of the connecting bars is such that the adjacent bar elements in the first condition of the stent are displaced relative to each by up to a quarter period in the longitudinal direction of the stent.

36. The stent of claim 25, wherein

the bar elements of the first and second support portions are of substantially the same periodic configuration and a length of the connecting bars is such that the adjacent bar elements in the first condition of the stent are displaced relative to each by up to a quarter period in the longitudinal direction of the stent.

37. The stent of claim 27, wherein

the bar elements of the first and second support portions are of substantially the same periodic configuration and a length of the connecting bars is such that the adjacent bar elements in the first condition of the stent are displaced relative to each by up to a quarter period in the longitudinal direction of the stent.

38. The stent of claim 29, wherein

the bar elements of the first and second support portions are of substantially the same periodic configuration and a length of the connecting bars is such that the adjacent bar elements in the first condition of the stent are displaced relative to each by up to a quarter period in the longitudinal direction of the stent.

39. The stent of claim 31, wherein

the bar elements of the first and second support portions are of substantially the same periodic configuration and a length of the connecting bars is such that the adjacent bar elements in the first condition of the stent are displaced relative to each by up to a quarter period in the longitudinal direction of the stent.

40. The stent of claim 33, wherein

the bar elements of the first and second support portions are of substantially the same periodic configuration and a length of the connecting bars is such that the adjacent bar elements in the first condition of the stent are displaced relative to each by up to a quarter period in the longitudinal direction of the stent.

41. The stent of claim 1, wherein

the bar elements of the first and second support portions are of substantially the same period configuration and a length of the connecting bars is such that in the second condition of the stent the adjacent bar elements extend substantially in phase with each other with respect to the longitudinal direction of the stent.

41. The stent of claim 1, wherein

the bar elements of the first and second support portions are of substantially the same period configuration and a length of the connecting bars is such that in the second condition of the stent the adjacent bar elements extend substantially in phase with each other with respect to the longitudinal direction of the stent.

42. The stent of claim 34, wherein

the bar elements of the first and second support portions are of substantially the same period configuration and a length of the connecting bars is such that in the second condition of the stent the adjacent bar elements extend substantially in phase with each other with respect to the longitudinal direction of the stent.

43. The stent of claim 35, wherein

the bar elements of the first and second support portions are of substantially the same period configuration and a length of the connecting bars is such that in the second condition of the stent the adjacent bar elements extend substantially in phase with each other with respect to the longitudinal direction of the stent.

44. The stent of claim 36, wherein

the bar elements of the first and second support portions are of substantially the same period configuration and a length of the connecting bars is such that in the second condition of the stent the adjacent bar elements extend substantially in phase with each other with respect to the longitudinal direction of the stent.

45. The stent of claim 37, wherein

the bar elements of the first and second support portions are of substantially the same period configuration and a length of the connecting bars is such that in the second condition of the stent the adjacent bar elements extend substantially in phase with each other with respect to the longitudinal direction of the stent.

46. The stent of claim 38, wherein

the bar elements of the first and second support portions are of substantially the same period configuration and a length of the connecting bars is such that in the second condition of the stent the adjacent bar elements extend substantially in phase with each other with respect to the longitudinal direction of the stent.

47. The stent of claim 39, wherein

the bar elements of the first and second support portions are of substantially the same period configuration and a length of the connecting bars is such that in the second condition of the stent the adjacent bar elements extend substantially in phase with each other with respect to the longitudinal direction of the stent.

48. The stent of claim 40, wherein

the bar elements of the first and second support portions are of substantially the same period configuration and a length of the connecting bars is such that in the second condition of the stent the adjacent bar elements extend substantially in phase with each other with respect to the longitudinal direction of the stent.

49. The stent of claim 1, wherein

the bar elements are designed to increase the flexibility of the stent.

50. The stent of claim 41, wherein
the bar elements are designed to increase the flexibility of the stent.

51. The stent of claim 42, wherein
the bar elements are designed to increase the flexibility of the stent.

52. The stent of claim 43, wherein
the bar elements are designed to increase the flexibility of the stent.

53. The stent of claim 44, wherein
the bar elements are designed to increase the flexibility of the stent.

54. The stent of claim 45, wherein
the bar elements are designed to increase the flexibility of the stent.

55. The stent of claim 46, wherein
the bar elements are designed to increase the flexibility of the stent.

56. The stent of claim 47, wherein

the bar elements are designed to increase the flexibility of the stent.

57. The stent of claim 48, wherein

the bar elements are designed to increase the flexibility of the stent.

58. The stent of claim 1, wherein

at least one support portion formed by a bar element, the direction of curvature of which changes in a central region between a pair of turning points.

59. A catheter for stent implantation, said catheter comprising:

a stent for expansion from a first condition into an expanded second condition in which it holds a vessel in an expanded state, said stent comprising:

a tubular body, a peripheral surface of which is formed by a plurality of support portions that extend in a longitudinal direction of the stent, the support portions comprising:

a plurality of bar elements; and

a plurality of connecting bars that connect the bar elements;

wherein the support portions form a plurality of support portion groups with at least a first support portion and a second support portion in adjacent relationship thereto in a peripheral direction of the stent, the bar elements of which extend in a meander configuration in the longitudinal direction of the stent, and

wherein a first engagement point of the connecting bars engages the first support portion and a second engagement point of the connecting bars engages the second support portion, such that the first and second

engagement points are spaced apart from each other in the longitudinal direction of the stent and the connecting bars are configured and arranged so the spacing in the longitudinal direction between the first and second engagement points changes upon expansion of the stent to compensate for a reduction in length of the respective support portions.